

REMARKS

Summary

Claims 24 and 27 relate to the synthesizing of image data from plural mobile-object-based image sensing means to make panoramic image data. Such a synthesis can produce low-quality panoramic images, because the roof of the mobile object may be imaged by the image sensing means. To solve this problem, Claims 24 and 27 propose a unique image-sensing-means arrangement. The Office Action cites the patents to Gilblom, et al. and Lanckton, et al., but never asserts that they 1) relate to an apparatus or a method for synthesizing of image data from plural mobile-object-based image sensing means to make panoramic image data, 2) recognize the problems inherent therein or 3) suggest solutions thereto. Instead, page 5 of the Office Action merely concludes that it would be obvious to combine these patents to produce the claimed invention because the skilled artisan “would have had no difficulty in [combining the Gilblom, et al. and Lanckton, et al. teachings] ... for the same well known image synthesizing and recording purposes as claimed”. But the mere fact that the references *can* be combined does not render a claimed combination obvious unless the cited art suggests the desirability of the combination, MPEP § 2143.01. And nowhere does the Office Action assert that the cited art suggests the desirability of the combination. Therefore, Applicants submit that the Office has completely failed to satisfy its burden of proof to establish a prima facie case of obviousness. In addition, MPEP § 2142 requires the cited art to show all the claimed features. But the Office Action fails to cite any art disclosing or suggesting the synthesizing of image data from plural mobile-object-based image sensing means to make panoramic image data, as recited by Claims 24

and 27. For these reasons, the rejection of independent Claims 24 and 27 and their dependent is improper and should be withdrawn.

Status of the claims

Claims 24-27 are pending in this application, with Claims 24 and 27 being independent. Claim 24 has been amended to correct a minor informality therein.

Requested action

Applicants request favorable reconsideration and allowance of this application in view of the foregoing amendments and the following remarks.

Formal rejection

Claims 24-26 are rejected under 35 U.S.C. §112, second paragraph, for a minor informality in Claim 24.

In response, while not conceding the propriety of the rejection, Claim 24 has been amended. Applicants submit that as amended, this claim now even more clearly satisfies 35 U.S.C. §112, second paragraph.

Substantive rejection

Claims 24-27 are rejected under 35 U.S.C. §103(a) as being unpatentable over the patent to Gilblom et al. (USP 5,650,813) in view of the patent to Lanckton et al. (USP 5,517,419) and the patent to Fields et al. (USP 5,767,845).

Response to substantive rejection

This rejection is respectfully traversed for the following reasons.

Independent Claim 24 relates to an image processing method for synthesizing first image data sensed by a first image sensing means with second image data sensed by a second image sensing means. The first and second image sensing means are arranged separately on a mobile object with a known distance between them in the moving direction of the mobile object. The first image sensing means is arranged to have an image sensing direction substantially aligned with the moving direction of the mobile object, the second image sensing means is arranged to have an image sensing direction aligned with a direction opposite to the moving direction of the mobile object, and each of the first and second image data is recorded with information indicating when the image data was sensed. The method comprises the steps of retrieving image data sensed at a first time instant from among a group of the first image data, and retrieving image data sensed at a second time instant from among a group of the second image data. The second time instant is a time occurring after the first time instant by a time period corresponding to the known distance between the first image sensing means and the second image sensing means. The method further comprises the step of synthesizing the image data retrieved at the first time instant and the second time instant to make panoramic image data.

This method solves the following problem: If a camera for sensing images substantially in the moving direction of the object and a camera for sensing images in a direction opposite to the moving direction are closely arranged, it is difficult to generate a high-quality panoramic image since the roof of the mobile object would be included in the images sensed by either the first or second image sensing means. To avoid such a

problem, the present invention as recited in Claims 24 and 27 generates a panoramic image using image data from first and second image sensing means arranged separately with a known distance between them in a moving direction of the mobile object, by synthesizing first image data sensed by the first image sensing means at a first time instant with second image data sensed by the second image sensing means at a second time instant, after a time corresponding to the known distance from the first time instant. With these features, the difference in image sensing centers caused by the separation between the first and second image sensing means is compensated for, and a high-quality panoramic image can be generated.

In contrast, the patents to Gilblom et al., Lanckton et al., and Fields et al. do not disclose or suggest a method of synthesizing image data from plural mobile-object-based image sensing means to make panoramic image data. The failure of these patents to disclose or suggest at least this feature proves fatal to establishing a prima facie case of obviousness against independent Claim 24, since MPEP § 2142 states:

....the prior art reference (or references when combined)
must teach or suggest all the claim limitations

For this reason alone, independent Claim 24 is allowable over these patents.

But, Claim 24 is also allowable for an additional reason. To establish a prima facie case of obviousness, MPEP § 2142 also requires the Office to cite art suggesting the desirability of combining the cited art as suggested in the Office Action or to provide a convincing line of reasoning for such a combination:

....there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings.

....
The initial burden is on the examiner to provide some suggestion of the desirability of doing what the inventor has done. "To support the conclusion that the claimed invention is directed to obvious subject matter, either the references must expressly or impliedly suggest the claimed invention or the examiner must present a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references." *Ex parte Clapp*, 227 USPQ 972, 973 (Bd. Pat. App. & Inter. 1985).

Here, the Office Action has not cited any portion of the patents to Gilblom et al., Lanckton et al., and Fields et al. to suggest the desirability of using the mobile-object-based image sensing means recited in Claim 24 to make panoramic image data. Therefore, the Office must provide a convincing line of reasoning, based on knowledge generally available to those skilled in the art, as to why the skilled artisan would combine these patents to synthesize image data from the specific arrangement of the plural mobile-object-based image sensing means recited in Claim 24 to make panoramic image data. Applicants' motivation for inventing this combination was to avoid imaging the roof of the mobile object with the image sensing means, which would lower the image quality. In contrast, page 5 of the Office Action merely states that:

....one of ordinary skill in the art, having the Gilblom et al and Lanckton et al references in front of him/her and the general knowledge of the synthesizing and recording of images, would have had no difficulty in....[combining the Gilblom, et al. and Lanckton, et al. teachings] for the same well known image synthesizing and recording purposes as claimed.

But the Office Action never explains these well known image synthesizing and recording purposes. As a result, the Office Action fails to provide the convincing line of

reasoning required by MPEP § 2142. Therefore, the Office Action's argument becomes this: the skilled artisan could easily produce the claimed combination, and therefore such a combination is obvious. But MPEP § 2143.01 prohibits this kind of reasoning to establish a prima facie case of obviousness, stating: "The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination". And since the Office Action fails to specify the portion of the cited art suggesting the desirability of the combination, the Office Action has failed to establish a prima facie case of obviousness.

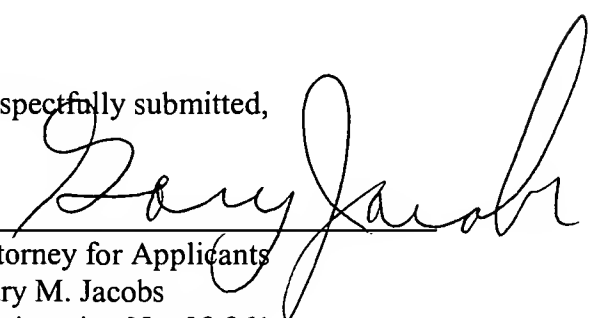
Thus, for this additional reason, the rejection of Claim 24 is improper and should be withdrawn. And since independent Claim 27 is an apparatus claim corresponding to method Claim 24, it is allowable for analogous reasons.

The dependent claims are allowable for the reasons given for the independent claims and because they recite features that are patentable in their own right. Individual consideration of the dependent claims is respectfully solicited.

In view of the above amendments and remarks, the claims are now in allowable form. Therefore, early passage to issue is respectfully solicited.

Applicants' undersigned attorney may be reached in our Washington, D.C. office by telephone at (202) 530-1010. All correspondence should continue to be directed to our address given below.

Respectfully submitted,



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